controlled, and the incidence of carditis reduced to a minimum.

3. That in it an instrument of research is provided for increasing our knowledge of the heart of the child and its response to the rheumatic toxin, and that the correlation of records obtained in such clinics would throw very valuable light upon the nature of the disease.

4. Finally, that the cardiac classification proposed offers a suitable basis for such correlation.

It is a special pleasure to record our indebtedness to Miss Watson, almoner, for her invaluable assistance in the organization of the clinic, since the success of the department has been in a large measure due to her efforts. To Professor Leonard Findlay, to whose initiative the inauguration of the clinic was due, and under whose care it continues, I wish to express my sincere gratitude for his unfailing help and encouragement in the development and correlation of the work and the supervision of its details.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, October 31st, 1925, p. 791. ² Ibid. ³ Ibid., March 14th, 1925, p. 496. ⁴ Hospital Service Series, May, 1920, 151-181.

THE ACTION OF INTESTINAL EXTRACTS.

(Preliminary Communication.)

BY

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AND

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Cow and Dixon have shown that injections of boiled and filtered intestinal mucous membrane into dogs induce a secretion of pituitrin in the cerebro-spinal fluid. The effect is not immediate, and the pituitrin cannot be detected till about an hour after injection and does not reach its maximum for one and a half hours or more. The determination of the amount of pituitrin was made by the routine method on the uterus of the virgin guinea-pig. These observers also showed, however, that cerebro-spinal fluid so obtained exerts all the other known actions of pituitrin. The fact that the intestine is concerned in this secretion suggested to us that the pituitary secretion would likely be concerned with some digestive or metabolic mechanism. After numerous attempts to explain the secretion our efforts were at last led in the right direction by the observation of Burn that pituitary extract antagonizes the action of insulin.

If insulin is injected into anaesthetized dogs it produces a fall in blood sugar which reaches a minimum about three hours after injection. If in such an animal the cerebro-spinal fluid is tapped after the fashion of Dixon and Halliburton and tested for pituitrin it is found to be present one and a half to two hours after injection; that is to say, insulin increases the secretion of pituitrin just as it has been shown to increase adrenaline, but that this secretion is not obvious in the case of the pituitary until the blood sugar has been considerably reduced.

The following typical protocols will explain the nature of the experiments.

Experiment I.—Dog, male, weight 10.5 kilos. Anaesthetized by chloroform, then A.C.E., and finally morphine and urethane.

	Blood Sugar.	Pituitrin in C.S.F.
After 15 mins. anaesthesia ...	= 0.067	 —
After 45 mins. " ...	= 0.074	 —
After 1 hr. 15 mins. " ...	= 0.085	 —
After 1 hr. 45 mins. " ...	= 0.095	 —
After 2 hrs. 15 mins. " ...	= 1.040	 —
After 2 hrs. 45 mins. " ...	= 1.150	 —

Experiment II.—Dog, female, weight 12 kilos. Anaesthetized by chloroform, then A.C.E., and finally morphine and urethane. 24 units insulin were given intravenously fifteen minutes after anaesthesia.

	Blood Sugar.	Pituitrin in C.S.F.
Before injection and 14 mins. after anaesthesia ...	= 0.066	 —
3/4 hr. after injection ...	= 0.061	 —
1 1/2 hrs. " " ...	= 0.055	 +
2 1/4 hrs. " " ...	= 0.047	 ++
3 hrs. " " ...	= 0.043	 ++
3 3/4 hrs. " " ...	= 0.051	 —

Experiment III.—Dog, male, weight 10 kilos. Anaesthetized by chloroform, then A.C.E., and finally morphine and urethane. 20 c.cm. of boiled and filtered intestinal extract were given intravenously fifteen minutes after anaesthesia.

	Blood Sugar.	Pituitrin in C.S.F.
Before injection and 14 mins. after anaesthesia ...	= 0.074	 —
3/4 hr. after injection ...	= 0.069	 —
1 1/2 hrs. " " ...	= 0.060	 +
2 1/4 hrs. " " ...	= 0.052	 ++
3 hrs. " " ...	= 0.041	 ++
3 3/4 hrs. " " ...	= 0.047	 —

It will, of course, be suggested that the secretion of these two ductless glands is a provision for antagonizing excessive insulin action. The analogy between injections of intestinal extracts and those of insulin is so marked in this respect that we were induced to try the effect of alimentary extracts on blood sugar in rabbits. Injections of boiled and filtered duodenal mucosa in these animals induce a fall of blood sugar comparable with that of insulin. The fall often goes down to the convulsant level, though we have never been able to produce convulsions. The active substance is not secretin since it is destroyed by boiling with dilute acids, which process does not destroy the secretin, since we were able to show that the extract still contained a plentiful supply. Boiling with 1 per cent. sodium bicarbonate also destroys the blood sugar reducing substance. Boiled and filtered extracts of pancreas and many other tissues which we have used do not exert this effect. Ivy and Fisher state that the intestine contains one-fiftieth the amount of insulin of that in the pancreas. We have prepared insulin from the intestinal mucous membrane of pigs by the Dudley method; we are not prepared at the moment to give any figure of its amount, but it is considerably greater than that suggested by Ivy and Fisher. Nor at this stage are we prepared to offer information as to why this insulin body comes out in boiled intestinal extracts and not in other tissue extracts. We think, however, that the evidence suggests that pituitary secretion following the injection of intestinal extract is of the same nature as that which obtains after the injection of insulin.

A COMMENTARY

ON

TWO CASES OF HUNTINGTON'S CHOREA.

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We have recently had under our care at Severalls Mental Hospital two brothers who suffered and died from Huntington's chorea. In view of the slight incidence of this disorder we venture to set forth in some detail an account of these cases based on our clinical and *post-mortem* investigations.

CASE I.

W. G., an ex-soldier, aged 34, was admitted to hospital on July 9th, 1917.

History.—The patient had served in the army for eleven years prior to 1914, and he re-enlisted during the war. He was appointed to the Field Artillery, and was stationed at Woolwich, but never saw active service abroad. A few months after re-enlistment he was sent to a military hospital for observation of his mental condition, and was found unfit for further service. He was discharged from the army and admitted to the local infirmary, being subsequently certified insane and sent to Cane Hill Mental Hospital, whence he was transferred to Severalls. He was stated to have contracted syphilis in India about 1906, and had been diagnosed as a case of dementia paralytica. A brother had died in Brentwood Mental Hospital.

Condition on Admission.—Mentally he was dull, apathetic, and took very little interest in his environment. He was rambling in his talk, and his memory was extremely defective; he could not remember his regimental number or the addresses of his near relatives. Speech was slurred. He was not hallucinated, but was restless, threatening, and inclined to be violent in his conduct. Physically he was well nourished, and showed no signs of injury. The cardiac, respiratory, and alimentary systems were normal. The pupils were equal, but sluggish in reaction to light. The knee-jerks were diminished and the gait was ataxic. He was

considered to be suffering from general paralysis of the insane. There is no record at this time of the existence of choreiform movements.

Progress.—Shortly after his admission definite choreic movements became manifest. They rapidly developed into constant, generalized, jerky movements of the head, neck, and limbs, which were invariably accentuated when the patient was addressed. Examination of the cerebro-spinal fluid was negative for syphilis, and the diagnosis, being altered to Huntington's chorea, was confirmed when a brother was admitted in June, 1918, obviously suffering from this disorder. Thenceforth a progressive dementia supervened. The patient became slovenly and defective in his habits, very amnesic, always irritable, occasionally hostile, and more and more restless and resistive to attention. He became increasingly feeble, and died on January 7th, 1925, the choreic movements persisting until the end.

Post-mortem Examination.

(a) **Macroscopic.**—**Brain:** Dura mater normal. Marked thickening of the pia-arachnoid, with a few scattered milk-white patches. Excess of subarachnoid and ventricular fluid. Local flattening and atrophy in frontal and fronto-parietal areas. No macroscopic lesion of basal ganglia. Cerebellar consistency soft in general. **Thorax:** Thyroid fibrotic. Old adhesions of right pleura. Some old fibrosis of right lung. Heart normal. **Abdomen:** Gall bladder full of small faceted stones. Nothing else abnormal.

(b) **Microscopic.**—Nothing abnormal was noted in the microscopic appearance of the suprarenal glands or liver. Sections were taken from the medulla, pons, cerebellum, and mid-brain; also from the caudate and lentiform nuclei, thalami, and precentral gyrus. These were stained with haematoxylin and eosin by Nissl's method, and by Levaditi's silver nitrate. The following were the changes seen:

(1) **Leptomenigitis.**—This consisted more in thickening of the pia-arachnoid than in increased vascularity.

(2) **Small Round-celled Infiltration in the Perivascular Lymphatics.**—This was not seen in the medulla, pons, or cerebellum, but became noticeable in the mid-brain, being more marked towards the margins of the transverse section. The infiltration was more definite in the lentiform nucleus, thalamus, and precentral gyrus, and was seen most clearly in the caudate nucleus. Not the larger vessels, but the capillary vessels were affected, and of these less than half showed the infiltration. The cells were frequently arranged in a single line beside the vessel. Occasionally there were groups of cells in the Virchow-Robin spaces, but the condition could hardly be said to amount to the "cuffing" of acute encephalitis.

(3) **Infiltration of Small Round Cells in the Pericellular Lymphatics.**—One or two small cells in the pericellular space were not taken as abnormal. Here and there, however, were found nerve cells round which were clumped three, four, or more small cells. In most sections these were only to be found by searching carefully; they were most plentiful in the precentral gyrus.

(4) **Dilatation of Vessels.**—Increased vascularity, with dilated and congested vessels, was only seen in one group of sections taken of the thalamus. Here the first glance gave the impression of encephalitis, and indeed one small haemorrhage was found, but there were only a few round cells in the lymphatics.

(5) **Cell Degeneration.**—The cells in most sections appeared healthy, including those of the substantia nigra. In the lentiform nucleus and the precentral gyrus were cells in all stages of degeneration, but the great majority of the cells seemed healthy. The degeneration was quite irregular in distribution.

Summary of Pathological Findings.

(a) In the cerebellum, pons, and medulla: no change except leptomenigitis.

(b) In the mid-brain, caudate and lentiform nuclei, thalamus, and precentral gyrus: infiltration of small round cells, most marked in the caudate nucleus.

(c) In the thalamus: increased vascularity in addition.

(d) In the lentiform nucleus and precentral gyrus: some degeneration of nerve cells.

CASE II.

G. G., a man of no occupation, aged 43, was admitted to hospital on January 17th, 1918.

Previous History.—The patient had not been previously under care and treatment, but he was stated to have spent "three parts of his life in the workhouse," where he used to be employed in the bootmaker's shop. During the last two months he had been restless and violent in his conduct, and had assaulted various people without provocation. He had been habitually insulting to members of the opposite sex, degraded in his habits, and "lay about in the fields rough at night."

Family History.—One brother died at Brentwood Mental Hospital. One brother was living at Severalls Mental Hospital. The mother was insane. The father "does not suffer from any disease of a choreiform nature, but has malignant disease of the oesophagus."

Condition on Admission.—Mentally he was confused in thought, and could give little account of himself. He was restless, excited, and resistive to attention. He had delusions of a persecutory nature regarding women, stating that females followed him about and received money for ill-treating him. He had a marked inferiority complex. Physically he was fairly nourished, and the heart, lungs, and alimentary system betrayed little abnormality. The knee-jerks were exaggerated, and he showed definite and constant choreic movements of the muscles of the limbs and face. The gait was very unsteady. The pupils were equal and normal in reaction to light and accommodation. Articulation was much impaired, and he was defective in his habits.

Progress.—The patient showed a rapidly advancing mental deterioration. He was always irritable and hostile in his attitude

to his environment. His speech soon became so affected that his remarks were altogether unintelligible. Constant and violent choreic movements of the head and neck and limbs persisted, resulting frequently in bruises and abrasions, in spite of elaborate padding of his immediate environment and the adoption of all possible precautions against injury. He became gradually enfeebled, and died on December 26th, 1921.

Post-mortem Examination.

Brain.—Skull-cap thickened. Generalized congestion of the superficial cerebral blood vessels. Oedematous condition of the pia-arachnoid. Excess of ventricular and subarachnoid fluid. Local atrophy of frontal and fronto-parietal areas. Generalized cerebral softening. Brain stem and cerebellum soft in consistency.

Thorax.—Old adhesions at apices of both lungs and congestion at bases. A few small patches of atheroma in the aorta. Heart showed nothing abnormal.

Abdomen.—The gall bladder was distended, and contained two gall stones.

A microscopic examination was not performed at the time of the patient's death.

The following points appear to be of interest in connexion with the cases described.

1. The existence of a family history of insanity transmitted through the mother, three sons becoming insane, and two of these developing Huntington's chorea.

2. The difference in the early history of the two brothers subsequently affected with chorea. One (G. G.) had never been capable of regular employment; the other (W. G.) had a long record of army service prior to and during the first half of the war.

3. The younger brother (W. G.) had a history of syphilis contracted abroad during military service in 1906, and was diagnosed on admission as a case of general paralysis of the insane.

4. The same brother exhibited no choreic movements at the time of his admission; whereas G. G. showed unmistakable evidence of chorea from the first.

5. Regarding the difference in the age factor, the younger brother, who had led an active life, developed the disease at 34, while the older, who had spent the major part of his existence under institutional control, exhibited no symptoms until he was 43.

6. As regards the morbid anatomy, both cases exhibited thickening of the pia-arachnoid, local atrophy in the frontal and fronto-parietal areas, generalized cerebral and cerebellar softening, and a pronounced increase of cerebro-spinal fluid with dilatation of the ventricles.

7. In relation to the case (W. G.) in which it was possible to carry out a detailed examination under the microscope, the pathological changes consisted of chronic leptomenigitis, small round-celled infiltration of the perivascular lymphatics, particularly definite in the caudate nucleus, increased vascularity in the thalamus, but without any definite focus of acute encephalitis. There was also some degeneration of pyramidal cells, especially in the precentral gyrus.

The rarity of Huntington's chorea has prompted us to record the facts at our disposal relating to the two brothers who suffered, and ultimately died, from this disorder at this institution.

In conclusion, we wish to express our indebtedness to Dr. R. C. Turnbull, medical superintendent of Severalls Mental Hospital, for permission to publish this account.

THE INFLUENCE OF THE VERMIFORM APPENDIX ON GYNAECOLOGICAL SURGERY.*

BY

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THE figures upon which this paper is based are taken from a series of abdominal sections performed in the gynaecological department of the Bristol Royal Infirmary. They have not been selected in any way, and include every laparotomy done in the department during a period of twelve months. The total number is 300, and I am indebted to the late Professor W. C. Swayne for permission to use cases upon which he had operated, and

* Based on a paper read before the Bristol Medico-Chirurgical Society.